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10/787,069	02/24/2004	Toshihiko Takakura	10921.203US01	9514

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MERCHANT & GOULD PC
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

EXAMINER	
CHOI, HAN S	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/787,069	TAKAKURA, TOSHIHIKO	
	Examiner	Art Unit	
	Han S. Choi	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-22 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 24 February 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2/24/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 6, 7, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (US 2004/0201787) in view of Smith (US Pat. 5,797,050).

Sekiguchi et al. discloses the basic elements of the claimed invention. Sekiguchi teaches a printhead provided with a liquid crystal shutter in [Paragraph 0001, Lines 1-7]. Sekiguchi et al. teaches a first [1] and a second [21] transparent substrates arranged to face each other in [Paragraph 0083, Lines 5-7] shown in Fig. 3. Sekiguchi et al. teaches a transparent electrode [35 and 37] in [Paragraph 0094, Lines 4-6] laminated over the light shielding film [25] in [Paragraph 0088, Lines 1-4] and via a single insulating layer [30] in [Paragraph 0101] shown in Fig. 3. Sekiguchi et al. does not teach incidence of light traveling from the first transparent substrate to the second transparent substrate.

Smith teaches incident light traveling from the first substrate to the second substrates [230] with the light blocking layer [200] in [Col. 6, Line 41 and Line 54]

restricting the incident light traveling from the first to the second substrate [230] shown in Fig. 3a.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teachings of Smith with the printhead and liquid crystal shutter of Sekiguchi et al. for the purpose of altering the transmittance of incident light.

Referring to claim 20, Sekiguchi et al. teaches an illuminator [46] capable of individually emitting red light, green light, and blue light in [Paragraph 0100, Lines 1-4].

Referring to claims 6 and 7, Sekiguchi et al. teaches the light shielding film [25] formed of chromium with a nonconductive natural oxide film on the chromium film (chromium oxide) in [Paragraph 0131, Lines 1-6].

3. Claims 2, 3, 4, and 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (US 2004/0201787) in view of Smith (US Pat. 5,797,050) as applied to claim 1 above, and further in view of Shiraishi et al. (US Pat. 4,589,732).

Sekiguchi et al. in view of Smith discloses the basic elements of the claimed invention except for the insulating layer is made of an inorganic oxide, wherein the inorganic oxide is SiO_2 or Ta_2O_5, wherein the insulating layer has a thickness of no more than 2000 Angstroms and wherein the insulating layer is made by a method selected from the group consisting of dip coating, bias sputtering, and plasma CVD.

Shiraishi et al. teaches the insulating layer [74] made of SiO_2 which is an inorganic oxide, the insulating layer having a thickness of between 400 and 2000

Angstroms, and the insulating layer made by a method of sputtering, vacuum evaporation, or the like in [Col. 5, Lines 20-29] shown in Fig. 3c.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teachings of Shiraishi et al. with the liquid crystal shutter of Sekiguchi et al. in view of Smith for the purpose of having an insulating layer that prevents alkali ions from outside of the substrates from contacting the liquid crystal material, preventing moisture from being introduced into the liquid crystal material, and preventing cracking in the insulating layer.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (US 2004/0201787) in view of Smith (US Pat. 5,797,050) as applied to claim 1 above, and further in view of Takimoto et al. (US Pat. 5,384,649).

Sekiguchi et al. in view of Smith discloses the basic elements of the claimed invention. Sekiguchi et al. in view of Smith teaches the light shielding film [25] is formed with an opening [29] shown in Fig. 3 for selectively allowing incidence of light passing through the first transparent substrate [1] onto the second transparent substrate [21], wherein Smith teaches the incident light is entering from the first substrate. Sekiguchi et al. in view of Smith does not teach the opening having a tapered edge.

Takimoto et al. teaches an opening (in between the light blocking film [28]) having a tapered edge in shown in Fig. 7.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teachings of Takimoto et al. with the

liquid crystal shutter of Sekiguchi et al. in view of Smith for the purpose of more effectively blocking input light.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (US 2004/0201787) in view of Smith (US Pat. 5,797,050) and further in view of Takimoto et al. (US Pat. 5,384,649) as applied to claim 8 above, and further in view of Fukushima et al. (US Pat. 5,130,830).

Sekiguchi et al. in view of Smith and further in view of Takimoto et al. disclose the basic elements of the claimed invention except for the light shielding film having a thickness of no more than 3000 Angstroms.

Fukushima et al. teach a light blocking film [11A] having a thickness of 2000 Angstroms in [Col. 9, Lines 20-22].

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teachings of Fukushima et al. with the liquid crystal shutter of Sekiguchi et al. in view of Smith and further in view of Takimoto et al. for the purpose of providing a sufficient resolution.

6. Claim 10, 11, 12, 13, 14, 15, 16, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (US 2004/0201787) in view of Smith (US Pat. 5,797,050) and Shiraishi et al. (US Pat. 4,589,732).

Sekiguchi teaches a printhead provided with a liquid crystal shutter in [Paragraph 0001, Lines 1-7]. Sekiguchi et al. teaches a first [1] and a second [21] transparent

substrates arranged to face each other in [Paragraph 0083, Lines 5-7] shown in Fig. 3. Sekiguchi et al. teaches a transparent electrode [35 and 37] in [Paragraph 0094, Lines 4-6] laminated over the light shielding film [25] in [Paragraph 0088, Lines 1-4] and via a single insulating layer [30] in [Paragraph 0101] shown in Fig. 3. Sekiguchi et al. does not teach incidence of light traveling from the first transparent substrate to the second transparent substrate, the transparent electrode and the insulating layer made of an inorganic substance, specifically the insulating layer made of SiO_2 or Ta_2O_5 having a thickness of no more than 2000 Angstroms and made by a method selected from the group consisting of dip coating, bias sputtering, and plasma CVD.

Smith teaches incident light traveling from the first substrate to the second substrates [230] with the light blocking layer [200] in [Col. 6, Line 41 and Line 54] restricting the incident light traveling from the first to the second substrate [230] shown in Fig. 3a.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teachings of Smith with the printhead and liquid crystal shutter of Sekiguchi et al. for the purpose of altering the transmittance of incident light.

Shiraishi et al. teaches the insulating layer [74] made of SiO_2 which is an inorganic substance, the insulating layer having a thickness of between 400 and 2000 Angstroms, and the insulating layer made by a method of sputtering, vacuum evaporation, or the like in [Col. 5, Lines 20-29] shown in Fig. 3c and the transparent electrode [76 and 78] made of In_2O_3.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teachings of Shiraishi et al. to the modified liquid crystal shutter of Sekiguchi et al. for the purpose of having an insulating layer that prevents alkali ions from outside of the substrates from contacting the liquid crystal material, preventing moisture from being introduced into the liquid crystal material, and preventing cracking in the insulating layer.

Referring to claims 15 and 16, Sekiguchi et al. teaches the light shielding film [25] formed of chromium with a nonconductive natural oxide film on the chromium film (chromium oxide) (both are inorganic substances) in [Paragraph 0131, Lines 1-6].

Referring to claim 22, Sekiguchi et al. teaches an illuminator [46] capable of individually emitting red light, green light, and blue light in [Paragraph 0100, Lines 1-4].

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (US 2004/0201787) in view of Smith (US Pat. 5,797,050) and Shiraishi et al. (US Pat. 4,589,732) as applied to claim 10 above, and further in view of Takimoto et al. (US Pat. 5,384,649).

Sekiguchi et al. in view of Smith and Shiraishi et al. discloses the basic elements of the claimed invention. Sekiguchi et al. in view of Smith and Shiraishi et al. teaches the light shielding film [25] is formed with an opening [29] shown in Fig. 3 for selectively allowing incidence of light passing through the first transparent substrate [1] onto the second transparent substrate [21], wherein Smith teaches the incident light is entering

from the first substrate. Sekiguchi et al. in view of Smith and Shiraishi does not teach the opening having a tapered edge.

Takimoto et al. teaches an opening (in between the light blocking film [28]) having a tapered edge in shown in Fig. 7.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teachings of Takimoto et al. with the liquid crystal shutter of Sekiguchi et al. in view of Smith and Shiraishi et al. for the purpose of more effectively blocking input light.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (US 2004/0201787) in view of Smith (US Pat. 5,797,050) and Shiraishi et al. (US Pat. 4,589,732) and further in view of Takimoto et al. (US Pat. 5,384,649) as applied to claim 17 above, and further in view of Fukushima et al. (US Pat. 5,130,830).

Sekiguchi et al. in view of Smith and Shiraishi et al. and further in view of Takimoto et al. disclose the basic elements of the claimed invention except for the light shielding film having a thickness of no more than 3000 Angstroms.

Fukushima et al. teach a light blocking film [11A] having a thickness of 2000 Angstroms in [Col. 9, Lines 20-22].

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teachings of Fukushima et al. with the liquid crystal shutter of Sekiguchi et al. in view of Smith and Shiraishi et al. and further in view of Takimoto et al. for the purpose of providing a sufficient resolution.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art references (US Pat. 4,653,862; US Pat. 4,671,642; US 2003/0147028; US Pat. 4,907,859) cited in PTO 892 form show elements that are deemed to be relevant to the present invention. These references should be reviewed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Han S. Choi whose telephone number is (571) 272-8350. The examiner can normally be reached on Monday - Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HSC
4/25/06

Hai Chi Pham

HAI PHAM
PRIMARY EXAMINER